

ACHLYA GLOMERATA sp. nov.

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(WITH PLATE 79, CONTAINING 7 FIGURES)

Hyphae rather stout, branched, not long. About 40–45 μ in diameter at base and tapering to slender tips about 12 μ in diameter. At maturity, the main hyphae strongly incline to segment into elongated sections with dense protoplasm, but the slender apical section is apt to remain almost empty (fig. 1). Zoösporangia almost cylindrical, inclined to be somewhat irregular and often opening by a bent papilla (fig. 2). Oögonia abundant, approximately spherical, without pits; completely covered with short, blunt irregular warts (fig. 3). Oögonia borne on the tips of very slender and delicate, but contorted lateral branches that are either simple, in which case there is but one oögonium (fig. 3), or more or less intricately branched, in which case there are a number of oögonia borne on the tips of the group of branches (figs. 4, 5, and 6). Oöspores single or very rarely two in an oögonium; their diameter 15–23 μ , averaging about 20 μ . Antheridia absent from a good many oögonia, when present, club-shaped; borne on the tips of branches from the same glomerulus and one or several on an oögonium (fig. 5).

This species has been observed several times from two stations at Chapel Hill, North Carolina. The drawings are made from material taken from a cool spring in dense woods ("Lone Pine Spring") on April 30, 1912, and from the springy marsh at the foot of "Lone Pine Hill" on February 29, 1912. Pure cultures have now been kept for about six months.

This species does not closely approach any other; but it seems to be nearest the members of the *racemosa* group. The shape of the antheridia is like those of *A. racemosa* and its relatives, and there is considerable resemblance to the spiny oögonia of *A. racemosa stelligera* and to *A. decorata*, if these two are really distinct.¹ There is also some hint of the habit of *A. glomerata* in the occasional branched oögonial threads of *A. decorata*. In all the

¹ Obel considers *A. decorata* Peterson the same as *A. racemosa* var. *spinosa* Cornu (Annales Mycologici 8: 422. 1910): and Humphrey gives the latter as a synonym of *A. racemosa* var. *stelligera* Cornu.

members of the *racemosa* group the antheridial branches, when present, originate just below the oögonium. In *A. glomerata* they do not thus originate. This distinction with the usually bent and twisted branching habit of the oögonial hyphae separates the species sharply from any of the *racemosa* group. As already mentioned, the oögonia are sometimes borne singly on the ends of simple branches, especially near the tips of the main hyphae, but in such cases these branches are much more delicate and longer in proportion to the oögonia than is generally the case in any member of the *racemosa* group.

The fruiting branches are so abundant and many of them are so elongated and extensively branched that the cultures take on a whitish, cottony appearance except near the periphery, which is usually without branches. In extreme cases this effect is so pronounced that the culture may be compared in appearance to a rug with a fringe. This reminds us of the "woolly snow-white turf" produced by deBary's *Achlya spinosa*,² which species, while not in the close family circle of the *racemosa* group, shows its relation to them by its spiny oögonia with generally one egg, and by the origin and shape of the antheridia.

So far as the sexual organs are concerned, there is a remarkably close resemblance between *Achlya glomerata* and *Saprolegnia asterophora* deBary.³ As in most species of *Achlya*, the spores sometimes remain in the sporangium and sprout there (fig. 7).⁴

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EXPLANATION OF PLATE LXXIX

Fig. 1. Part of filament from an old culture, showing segmentation into chlamydospores. Part of one long cell is omitted. The contorted tip cell is almost empty. $\times 185$.

Fig. 2. A group of sporangia in different stages. $\times 125$.

Fig. 3. A simple oögonial filament with one oögonium. $\times 335$.

Fig. 4. A branched oögonial filament with two oögonia. $\times 335$.

Fig. 5. A more complex group of oögonia, not all shown. One is intercalary. $\times 335$.

Fig. 6. A characteristic group of oögonia with antheridia. The protoplasmic contents are shown only in part. $\times 335$.

Fig. 7. A sporangium in which the spores became encysted and sprouted in position. $\times 335$.

² Botanische Zeitung 46: 647. 1888.

³ See Beitr. zur Morph. und Phys. der Pilze, IV. Reihe, 1881.

⁴ See article by the author in Bot. Gaz. 50: 381. 1910.